

AIRCRAFT CIRCULARS
NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

No. 111

LES MUREAUX "130.A2" OBSERVATION AIRPLANE (FRENCH)

A High-Wing Two-Seat Monoplane

Washington
March, 1930

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS.

AIRCRAFT CIRCULAR NO. 111.

LES MUREAUX "130.A2" OBSERVATION AIRPLANE (FRENCH)*

A High-Wing Two-Seat Monoplane.

By André Frachet.

Les Mureaux "130.A2" two-seat observation airplane has various interesting details, and has just gone through its official tests.

We will not here discuss the actual tactical value of the "A2." Whatever that may be, this category of airplanes is charged with the most diverse missions. There follows, therefore, a complexity of arrangements which renders their satisfactory realization particularly difficult. The difficulties seem to have been very happily overcome on the "A2." Engineer Brunet, one of our best-informed young technicians, designed this airplane with a full comprehension of the needs of military airplanes.

The first requisite of such an airplane is to be practically utilizable. In this respect the "A2" offers especially well-designed devices. Its other characteristics are also among the best. Due to its rigid metal structure, it can be put together or taken apart very quickly. For the same reason, it cannot get

*From Les Ailes, November 21, 1929.

out of adjustment under normal conditions. It is assembled in such a manner as to facilitate repairs without the use of special tools.

From the aerodynamic viewpoint, the Brunet-Les Mureaux presents the best fineness compatible with simple and light construction. Its monoplane wing of large aspect ratio and also the wing section, a Brunet No. 7, assure an excellent efficiency. The effect of its large struts might be overestimated. Numerous tests have demonstrated that, far from increasing the drag, they are, on the contrary, advantageous in all respects.

The other important parts of this airplane, namely, the landing gear with its very wide track gauge, without axle and with wheel brakes, as also its engine bed, demountable and exchangeable, are of a simple and logical design.

The performances, given at the end of this report, were officially recorded at Villacoublay. No airplane of this category has, so far as we know, yet equaled them.

Les Mureaux "130.A2" has a thick wing of the parasol type. It has a span of 15 m (49.21 ft.) and a chord of 2.3 m (7.55 ft.). Seen in plan, the wing is rectangular with tips rounded in semi-circles. The trailing edge has a large circular cutaway for better upward visibility.

The unbalanced ailerons cover the whole span. They are operated by a semirigid control which can be supplemented by a device enabling them to act either differentially or simultaneously.

This device varies the length of the control rods by the intermediation of an endless screw.

The Brunet No. 7 wing section is constant throughout the whole span. The wing has neither dihedral nor sweepback. It is made in two symmetrical parts which are joined together, above the fuselage, on a converging central cabane. Each half-wing is rigidly braced by a pair of struts in the form of an N. These struts are attached to the wing spars at the middle of the half-span, their lower ends being attached to the base of the landing-gear struts.

The wing has two duralumin box spars consisting of two webs joined by special flanges. The assembling is done by bolts or rivets and lattices. These spars are connected with each other, in the planes of the upper and lower flanges, by parallel diagonals of duralumin tubing. The ribs, in the form of Warren girders, are duralumin channels of the same type as used for the flanges and lattices. Each lattice is joined to the flanges by a single rivet at each end, with a tubular tie rod. The leading edge is covered with sheet aluminum and the whole wing is covered with fabric in the usual manner.

The fuselage was specially designed to give to its occupants maximum visibility in all directions, especially downward. It has a rigid metal structure without piano wires. Its skeleton consists of four longerons of duralumin tubing joined by tubular uprights and diagonals. They are assembled by duralumin fittings,

without welding. These fittings are of a single type for the whole fuselage. At each joint, the ends of the tubes to be assembled are slightly flattened, reinforced by a stiffener and attached to the fittings by tubular rivets. This skeleton supports a light network of duralumin lattices covered with fabric toward the tail and with removable sheet-metal panels in front.

The pilot's cockpit is situated behind the wing. It is large and comfortable. The cockpit for the gunner-observer is immediately behind the pilot's cockpit. It is equipped with a Les Mureaux gun mount T.8, made by Vickers, which enables vertical upward firing. The inside arrangements of this cockpit meets all the requirements of military aviation. While sitting, the observer can easily make use of the various instruments placed at his disposal. A photograph camera is mounted in the axis of the airplane. It is attached to a special support, which enables it to point in any direction. This mount can likewise be used for a 12 x 10 bomb-dropping device. A sighting grid is placed near it. The observer also has a map holder and an inkstand. At the rear of the cockpit there are arranged the parachute, the signal rockets and a machine gun firing under the fuselage.

The elevator is in two parts, hinged to the stabilizer. The stabilizer framework consists of two spars of duralumin rectangular tubing and channel ribs. It is firmly braced against the fuselage by a strut on each side. The elevator is controlled

by means of cables and two outside horns. The vertical tail surfaces are a fin and a rudder of the same structure as the horizontal tail surfaces. The elevator and rudder are not balanced.

Les Mureaux "130.A2" can be equipped with any 450 to 600 hp engine. Two interchangeable engine beds have been designed for this airplane. One of them can receive the Hispano-Suiza 12 HB engine, the other the Salmson engine, both of 500 hp. These engine beds or mounts are made of duralumin tubes assembled by fittings similar to those of the fuselage. They are attached to four fittings corresponding to the four longerons of the fuselage. The mount designed for the Hispano engine is in the form of a chair supporting the longerons, this chair being held by a braced assembly of tubes. The mount of the Salmson engine has the form of the frustum of a pyramid with a square base. In front the engine is received by a box. The oil tank and a fire extinguisher are mounted on the engine bed.

The dumpable fuel tank is placed between the engine-propeller group and the pilot. It is provided with a S.E.M.A.P.E. protector. A space is provided for a supplementary tank, not dumpable, but provided with a quick drain cock. The fuel delivery is assured by two A.M. pumps and the cooling is entrusted to a frontal radiator encased in the lower side of the fuselage.

The axleless landing gear has a very wide track gauge of 2.6 m (8.53 ft.), the wheels being mounted in two horizontal

frames. Each wheel is placed at the end of two assemblies of N struts, one of which is attached at two points to the upper fuselage longeron, and the other to the bottom of the fuselage. The struts are streamlined duralumin tubes.

The supporting frame consists of a fixed part and of a hinged part on which the wheel is mounted. A special mounting device prevents any lateral deflection of the wheel. The shock absorber for each wheel consists of eight sets of sandows with independent parallel strands. The wheel can be removed without touching the device of fixation, owing to a quickly removable spindle. It is provided with a brake controlled by the pilot.

The tail skid, of steel and duralumin, has an orientable shoe. It is recalled by sandows.

General Characteristics

Span	15.0 m	49.21 ft.
Length	8.5 "	27.89 "
Height	3.1 "	10.17 "
Wing chord	2.3 "	7.55 "
Wing area	32.5 m ²	349.83 sq.ft.
Weight empty	1327 kg	2925.53 lb.
Fuel load	260 "	573.20 "
Disposable useful load	443 "	976.65 "
Full load	2030 "	4475.38 "

Wing loading	62.5 kg/m ²	12.8 lb./sq.ft.
Power "	4 kg/hp	8.8 lb./hp
Power per unit area	15.6 hp/m ²	1.43 hp/sq.ft.

Performances

Maximum speed near ground	230 km/h	142.9 mi./hr.
Speed at 1000 m (3281 ft.)	228 "	141.7 "
" " 2000 " (6562 ")	227 "	141.1 "
" " 3000 " (9842 ")	226 "	140.4 "
" " 4000 " (13123 ")	224 "	139.2 "
" " 5000 " (16404 ")	221 "	137.3 "

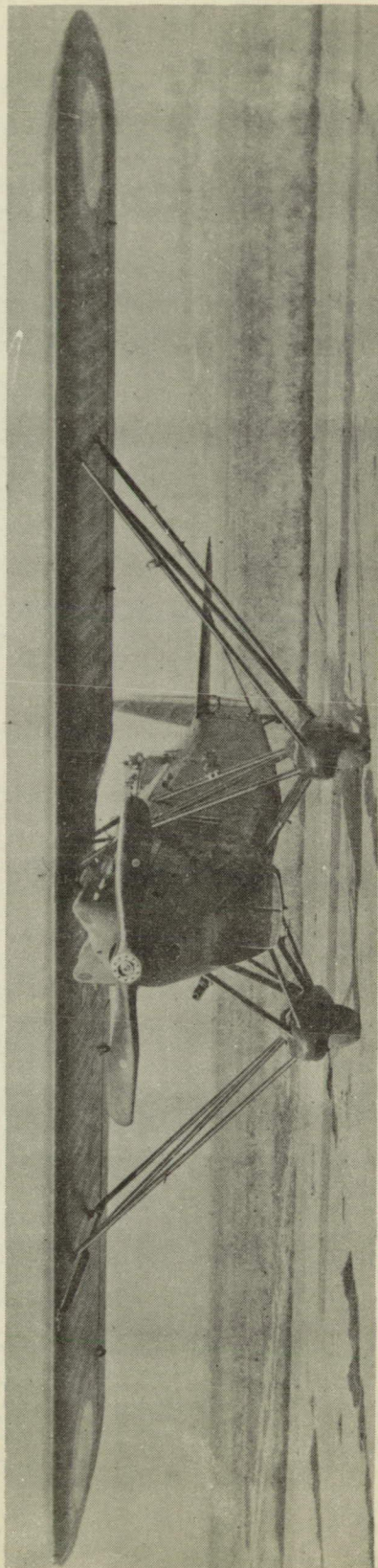
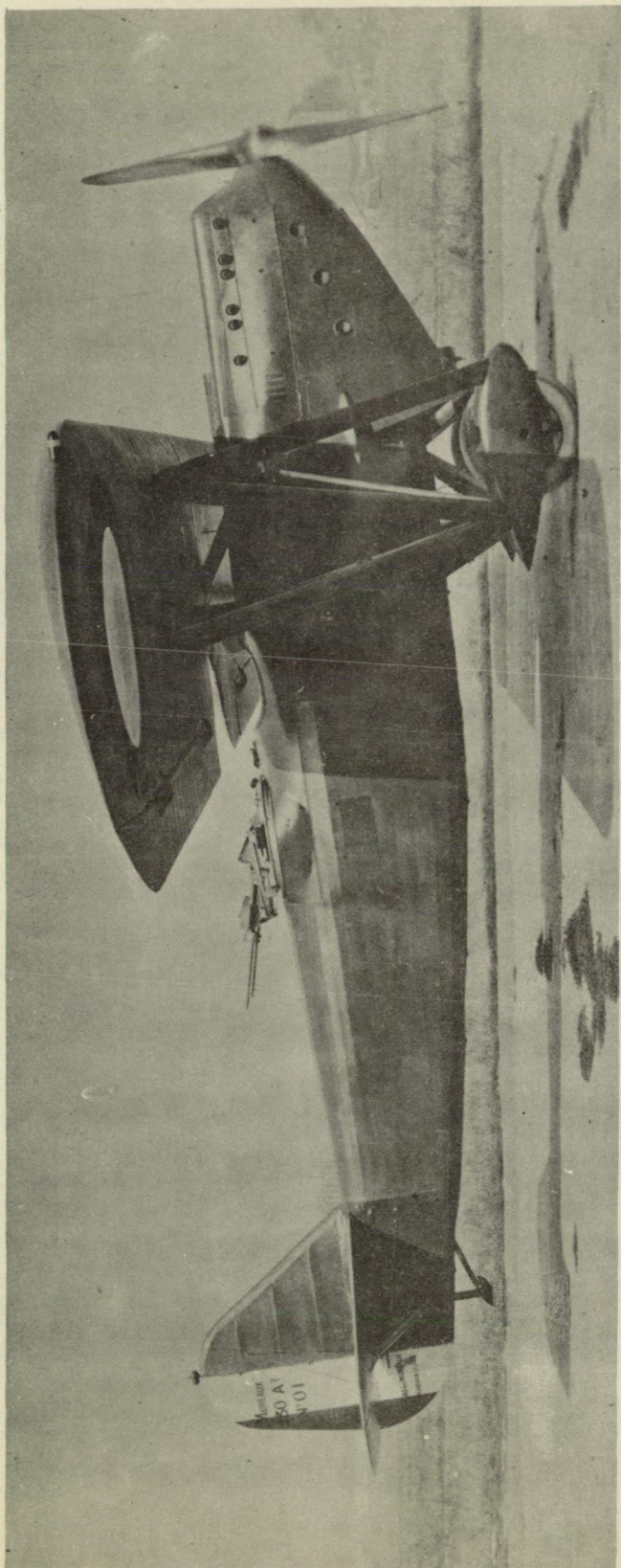
Climb to 1000 "	2 min. 0 sec.
" " 2000 "	5 " 5 "
" " 3000 "	8 " 30 "
" " 4000 "	12 " 30 "
" " 5000 "	17 " 45 "

Max. altitude reached
in tests:

6800 m (19685 ft.) 36 " 0 "

Theoretical ceiling 7800 m (25590 ft.)

Translation by Dwight M. Miner,
National Advisory Committee
for Aeronautics.



Figs.1 & 2 The "Mureaux" 130 A2 two seat observation airplane

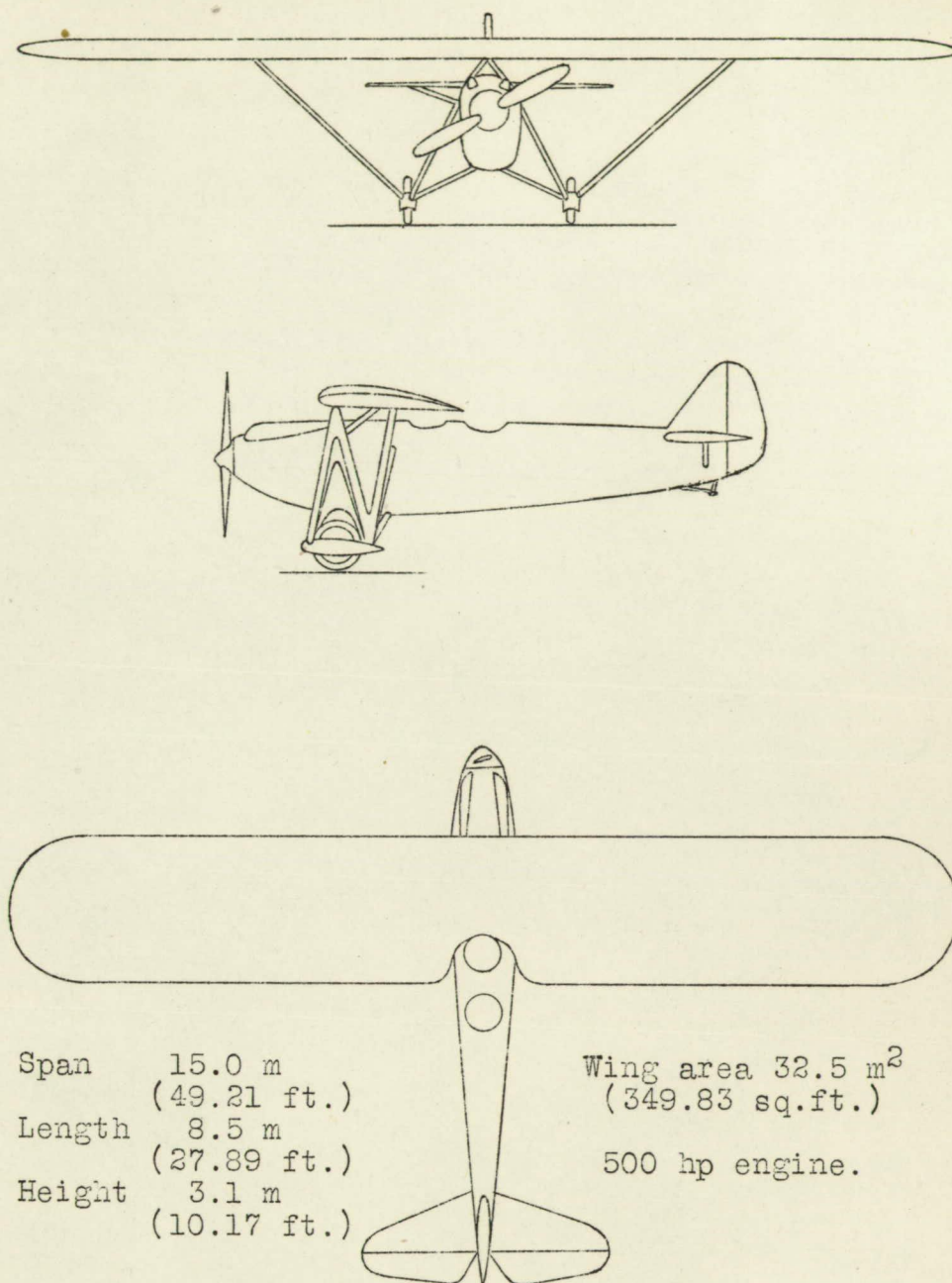


Fig.3 The Mureaux 130 A2 observation airplane.